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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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LIMITED COVERAGE

OPERATOR'S, ORGANIZATIONAL, DS, GS,

AND DEPOT MAINTENANCE MANUAL

RADIO RECEIVER R-902/GR

TRQ-23

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HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1969

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

Be careful when connecting cables

or working inside the receiver

DON'T TAKE CHANCES

CAUTION

When making resistance measurements on transistors,

use the highest accurate range scale on the ohmmeter.

TECHNICAL MANUAL

NO. 11-5820-784-15

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C. 1969

LIMITED COVERAGE TECHNICAL MANUAL

RADIO RECEIVER R-902/GR

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INTRODUCTION

This manual is designed to provide the technician with a minimum knowledge of critical maintenance information required to maintain Radio Receiver R–902/GR in service for a period of six months after the date of initial use. The limited coverage operator's, organizational, DS, GS, and depot maintenance technical manual will be superseded at a later date by a full coverage operator's, organizational, DS GS, and depot maintenance technical manual.

CHAPTER 1

ORGANIZATIONAL MAINTENANCE

1. Scope of Organizational Maintenance

Organizational maintenance of the radio receiver includes procedures that the operator is authorized to perform. In addition, the following procedures shall be performed by the organizational personnel.

a. Monthly preventive maintenance checks and services chart.

b. Replacement of fuses, indicator lamps and batteries.

2. Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	Reference
1	Pluck-out items	Check security of indicator lamps, connectors and plug-in modules	
2	Battery compartment	Open the battery compartment door and check the interior for evidence of water leakage, condensation and corrosion	
3	Batteries	Test the batteries under load: BA-403/U is between 1.30 and 1.50 volts BA-418/U is between 38 and 38 and 45 volts BA-415/U is between 72 and 90 volts	

3. Replacement of Fuse

The fuse is installed in a fuse holder on the front panel. To replace the fuse, remove the fuse holder from the front panel, replace the fuse and reinsert the fuse holder into the front panel.

4. Replacement of Dial Lamp

a. Remove the thumbscrew cap from the dial lamp cover.

b. Tilt the receiver forward, place a hand under the dial lampholder to catch the lamp as it falls out.

c. If the dial lamp sticks in holder, remove the screws that hold the dial lamp socket cover. Remove the cover.

d. Replace the lamp and reassemble.

5. Replacement of Batteries

The batteries are located in a compartment at the rear of the cover assembly. Access to this compartment is provided by a watertight panel secured by four turnlock fasteners.

a. Check to see if the POWER switch is in the OFF position.

b. Remove battery compartment cover by loosening the turnlock fasteners.

c. Remove the BA-408/U or BA-418/U battery first. Remove the BA-415/U battery last and replace it first.

Caution: Do not rock or rotate a battery while removing or replacing it. The battery or its mating plug may be damaged.

d. Place the replacement battery directly in line with its mating plug. Be sure the keyways are aligned and slide the battery in until it is firmly mated with the plug.

e. Replace the compartment cover and secure the turnlock fasteners.

CHAPTER 2

BLOCK DIAGRAM DISCUSSION

1. General

Receiver, Radio R-902/GR is a single conversion superheterodyne receiver capable of receiving continuous wave (cw), amplitude modulation (am) and frequency modulation (fm) signals over a continuously tunable frequency range of 95 to 405 megacycles (mc). Calibration checkpoints are provided at multiples of 8 mc. The receiver may be used as an intercept receiver or as a direction finder. The receiver has an audio output jack and a separate diode output jack for use with certain types of bearing indicators. Figure 1 is a block diagram of the receiver signal paths. For complete circuit details refer to the schematic diagram (fig. 2). The block diagram is discussed in paragraphs 2 through 14.

2. Antenna Input

An rf signal is applied to the receiver through either ANT jack J1 of DF ANT jack J2, as selected by antenna selector switch S1. Relay switches K1 and K2 are controlled by POWER switch S2 on the front panel and selects the path for the induced signal. When the POWER switch is at VEH ON, the signal is applied from the antenna to the rf amplifier. When the POWER switch is in the BAT ON position, the signal is applied from the antenna directly to the input of the first preselector. The purpose of this switching arrangement is to conserve the batteries by disconnecting the rf stage when the receiver is operated from the internal batteries.

3. RF Amplifier

The rf signal from the antenna circuit and K1 is coupled to V101 which is a type 7077 ceramic triode tube. The rf amplifier is tuned by one section of the variable inductance tuner. The amplified output signal from V101 is coupled to the first preselector input through relay switch K2.

4. First, Second and Third Preselectors

The rf preselector is a three section passive band-pass circuit tuned by three sections of the variable inductance tuner. An antenna trim control is used to match the first preselector input circuit to either the receiving antenna, the DF antenna, or the rf amplifier output circuit.

5. Mixer

Signals from the third preselector and the local oscillator stage are heterodyned in mixer CR102. The output circuit is tuned to the difference frequency (30 mc) which is the intermediate frequency (if) of the receiver. The output is applied to the input of the first if amplifier stage.

6. Local Oscillator

The local oscillator V102 is a modified Colpitts circuit using a 6375 triode tube. The operating frequency of the local oscillator is 30 mc above the rf frequency. It is tuned by one section of the variable inductance tuner.

7. First, Second, Third, Fourth and Fifth IF Amplifiers

The 30 mc if signal from the mixer stage is amplified by five similar if amplifier stages. The DIODE OUTPUT is taken from the plate circuit of the fifth stage and is available at a connector on the front panel. These plug-in stages are not interchangeable because of some differences in values of components and variations in input and output transformers. The if amplifier stages use subminiature-type pentode tubes.

8. Sixth IF Amplifier

The signal from the fifth if amplifier stage is applied to the sixth if stage and is amplified in the same manner as in the five preceding stages. Amplitude-modulated signals are detected by a diode located in the output circuit of the sixth if stage. The detected signal is coupled to the input of audio stage 3A11. When operating in CW or CAL, the detected signal is coupled to the chopper stage. The if signal present in the output of the sixth if stage is also coupled to the fm discriminator. A control voltage for avc operation is developed in the output of the sixth if stage and is applied to all if stages to provide automatic biasing when the MODE switch is in the AM position.

9. Filter

A 25-kilocycle (kc) crystal filter is mounted between the second and third if stages, and is inserted into the circuit when BANDWIDTH switch S1201 is in the 25 KC position. The purpose of this filter is to reduce the pass band and thereby improve selectivity.

10. CW Chopper and Audio Oscillator

When switch S4 is in the CW or CAL position, the 1.5-volt filament supply is connected to audio oscillator V801. The audio tone generated by the oscillator is coupled to chopper Q801. The dc voltage of the detected signal in the sixth if amplifier is coupled to Q801. The cw signals (dc) are converted to an audio tone by the chopper and applied to the audio stages. The use of a chopper eliminates the need for a beat-frequency oscillator to receive cw signals.

11. FM Discriminator

Frequency modulation of the if signal is detected by a modified Foster-Seely type discriminator. The if output signal from the sixth if amplifier is coupled to the input tank circuit of the discriminator. The discriminator output is coupled to the audio amplifier stage when the MODE switch S4 is in the FM position.

12. Audio Stage

The three different types of derived audio signals (fm, am, and cw) are coupled to the audio stage by MODE switch S4. The input transistor operates with a small amount of negative feedback which raises the input impedance, thereby reducing the loading of the detectors. The amplifier output is coupled by a transformer to AUDIO jack J16.

13. Calibration Oscillator and Harmonic Generator

The calibrator is an electron-coupled modified Pierce oscillator which produces a fundamental frequency of 8 mc. The calibration oscillator is made operative when MODE switch S4 is in the CAL position. The oscillator output signal developed in the plate circuit is coupled to the harmonic generator. The rectified wave developed across CR101 is a complex wave, composed of the fundamental frequency of the calibrator and harmonics of that fundamental. The harmonics are applied to the input of the first preselector through a capacitive coupling device which is a structural part of the receiver.

14. Power Source.

POWER switch S2 selects the type of power supply to be used. For battery operation, power is obtained from dry batteries in the battery compartment. For operation from a vehicular electrical source, a dc-to-dc converter type vehicular power supply is used. The vehicular power supply is located in the cover assembly. It requires an input voltage, from a vehicular electrical source, of 24 volts, dc, at 550 milliamperes.

VOLTAGE AND RESISTANCE MEASUREMENTS

Table I lists voltage and resistance measurements of the units contained in Radio Receiver R-902/GR. The measurements are made with the panel control positions as tabulated below.

Control	Setting
MODE	AM
BANDWITH	160 KC
TUNING	95 MC
ANT TRIM	PEAK
AF GAIN	MAXIMUM
RF GAIN	MAXIMUM
METER	SIG
POWER:	
voltage measurement	VEH
resistance measurement	OFF
ANT/DF ANT	ANT

Note. All voltage and resistance measurements listed in Table I were made with a vacuum tube voltmeter, Hewlett Packard Model 410B.

TABLE I. VOLTAGE AND RESISTANCE MEASUREMENTS

Receiver Unit	Pin Number	Voltage (in volts)	Resistance (in ohms)
RF Tuner Unit 3A13			
3A13V1	1	-0.42	800K
	4		3.2
	8	90	80K
3A13V2	1	26	10K
	5	1.45	2.2
	8	90	90K
3A13Q1	Emitter	1.25	2.2K
	Base	41.4	28K
	Collector	10	50K
First IF Amplifier Unit 3A1			
3A1Q1	Drain	28	1.1K
	Gate	2.15	6.2K
	Source	3.6	1.0K
Second IF Amplifier Unit 3A2			
3A2V1	1	27	15K
	2	27	15K
	3	0	0
	4	-0.1	130K
	5	1.3	5.0
Third IF Amplifier Unit 3A3			
3A3V1	1	27	15K
	2	27	15K
	3	0	0
	4	-0.08	130K
	5	1.3	4.0

TABLE I. VOLTAGE AND RESISTANCE MEASUREMENTS (cont)

Receiver Unit	Pin Number	Voltage (in volts)	Resistance (in ohms)
Fourth IF Amplifier Unit 3A4			
3A4V1	1	27	14K
	2	27	14K
	3	0	0
	4	-0.7	120K
	5	1.3	4.0
Fifth IF Amplifier Unit 3A5	1	23	14K
	2	23	14K
	3	0	0
	4	-0.06	120K
	5	1.42	3.0
Sixth IF Amplifier Unit 3A6			
3A6V1	1	21	12K
	2	21	12K
	3	0	0
	4	-0.03	120K
	5	1.4	2.5
Diode Detector Unit 3A7			
3A7Q1	Drain	14	100
	Gate	0	10K
	Source	2.4	1K
3A7Q2	Emitter	12	3K
	Base	12.5	6K
	Collector	25	1.7K
3A7Q3	Emitter	11.2	2.5K
	Base	12	5.5K
	Collector	25	1.6K

TABLE I. VOLTAGE AND RESISTANCE MEASUREMENTS (cont)

Receiver Unit	Pin Number	Voltage (in volts)	Resistance (in ohms)
Calibrator Unit 3A9			
3A9V1	1	32	14K
	2	39	14K
	3	0	0
	4	0	5M
	5	1.4	2.0
Chopper Unit 3A8			
3A8V1	1	38	8K
	2	38	7.5K
	3	0	0
	4	0	50K
	5	1.5	2.0
3A8Q1	Emitter	-0.35	40
	Base	0	150
	Collector	0	0
Audio Amplifier Unit 3A11			
3A11Q1	Emitter	17	10K
	Base	17.3	140K
	Collector	28	45K
3A11Q2	Emitter	11	5K
	Base	11.5	10K
	Collector	20.0	10K
3A11Q3	Emitter	20.0	1.3K
	Base	20.0	10K
	Collector	34.0	3K
Power Supply Unit 3A12			
3A12T1	1	15	38
	2	1.8	38
	3	14	38
	4	20	1.6
	5	3.0	2.0

TABLE I. VOLTAGE AND RESISTANCE MEASUREMENTS (cont)

Receiver Unit	Pin Number	Voltage (in volts)	Resistance (in ohms)
3A12T1 (cont)	6	21.5	1.6
	7	18	7.0
	8	18	7.0
	9	2.35	0
	10	0.55	0
	11	2.35	0
	12	7.7	0
	13	0	0
	14	7.7	0
	15	33	7.0
	16	33	7.0

CHAPTER 4

PREOPERATIONAL PROCEDURES

There are no preoperational procedures required by field or depot level personnel.

APPENDIX A

BASIC ISSUE ITEMS

Section I. INTRODUCTION

A–1. Scope

This appendix lists items which accompany the R–902/GR or are required for installation, operation, or operator's maintenance.

A–2. General

This basic issue items list is divided into the following sections:

a. Basic Issue Items—Section II. A list of items which accompany the R–902/GR and are required by the operator/crew for installation, operation, or maintenance.

b. Maintenance and Operating Supplies—Section III. Not applicable.

A–3. Explanation of Columns

The following provides an explanation of columns in section II.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1.

(1) Source codes indicate the selection status and source for the listed item. Source codes are—

Code	*Explanation*
P	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are subject to the provisions of AR 380–41.
P10	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380–41.
M	Repair parts which are not procured or stocked, but are to be manufactured at indicated maintenance levels.
A	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.
X2	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned with accompanying justification, through normal supply channels.
C	Repair parts authorized for local procurement. Where such repair parts are not obtainable from local procurement, requirements will be requisitioned through normal supply channels accompanied by a supporting statement of nonavailability from local procurement.
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is—

Code	*Explanation*
C	Operator/crew

(3) Recoverability codes indicate whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are—

Code	*Explanation*
R	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

Code	*Explanation*
S	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T	High-dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high-dollar value reusable casings or castings.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U/M), Column 4. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit, Column 5. This column indicates the quantity of the item used in R–902/GR. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. Quantity Furnished With Equipment, Column 6. This column indicates the quantity of an item furnished with the equipment.

g. Illustration, Column 7. Not applicable.

A–4. Explanation of Columns in the Tabular List of Maintenance and Operating Supplies—Section III

Not applicable.

A–5. Federal Supply Code for Manufacturers

Code	*Manufacturer's name*
08805	General Electric Co., Large Lamp Dept.
81349	Military Specifications

SECTION II. BASIC ISSUE ITEMS

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) QTY FURN WITH EQUIP	(7) ILLUSTRATIONS (a) FIG. NO.	(7) ILLUSTRATIONS (b) ITEM NO. OR REFERENCE DESIGNATION
	5820-136-4975	RECEIVER, RADIO R-902/GR (This item is nonexpendable)					
		TECHNICAL MANUAL TM 11-5820-784-15	EA	1	1		
		Requisition through pinpoint account number if assigned; otherwise through nearest Adjutant General facility.					
		A quantity of one technical manual is packed with each equipment. Where a valid need exists, additional copies may be requisitioned and kept on hand.					
P-C	5960-681-9789	ELECTRON TUBE: JAN6612; (81349)	EA	2	4		
P-C	5961-813-9360	TRANSISTOR: JAN2N1613; (81349)	EA	2	1		
P-C	5920-284-9220	FUSE, CARTRIDGE: F02B-250V1A; (81349)	EA	1	5		
P-C	6240-228-7130	LAMP: 331; (08805)	EA	1	5		
		NO ACCESSORIES, TOOLS, OR TEST EQUIPMENT ARE TO BE ISSUED WITH THIS EQUIPMENT					
		NO BASIC ISSUE ITEMS ARE MOUNTED IN OR ON THE EQUIPMENT					

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B–1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for the R–902/GR. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B–2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine serviceability of an item by comparing its physical, and electrical characteristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator-type tests using internal meters or indicating devices.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. Replace. To replace unserviceable items with serviceable like items.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable conditions as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. Rebuild. The highest degree of material maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

B–3. Explanation of Format

a. Column 1, Group Number. Not applicable.

b. Column 2, Function Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	*Maintenance category*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory. The column in table I are as follows:

B–4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The column in table I are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the maintenance allocation chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RECEIVER, RADIO R-902/GR	O	F	O	F	H	H	O	O	H	D	D	1-14	
	RF TUNER & AMPLIFIER ASSEMBLIES								F	H	D	D	1,4,5,6,7,8	*
	DIODE DETECTOR ASSEMBLY								F	H	D	D	1,4,5,6,7,8,9, 10,11	*
	CALIBRATOR ASSEMBLY								F	H	D	D	1,2,3,5,6,7, 10,11	*
	CHOPPER ASSEMBLY								F	H	D	D	3,5,6,7	*
	FM DISCRIMINATOR ASSEMBLY								F	H	D	D	3,4,5,6,9,10, 11	*
	IF AMPLIFIER ASSEMBLIES								F	H	D	D	1,2,3,5,6,7,8, 10,11	*
	AF AMPLIFIER ASSEMBLY								F	H	D	D	1,3,5,6,7,9	*
	POWER SUPPLY								F	H	D	D	2,5,6,7,9	*
														*Use tools 12, 13, or 14 as required.

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		R-902/GR (continued)		
1	F,H,D,	SIGNAL GENERATOR AN/USM-44A	6625-669-4031	
2	F,H,D	COUNTER, ELEC. DIGITAL READOUT AN/USM-207	6625-911-6368	
3	F,H,D	OUTPUT METER TS-585B/U	6625-244-0501	
4	F,H,D	SIGNAL GENERATOR(FM) AN/URM-70	6625-519-2104	
5	F	MULTIMETER ME-26/U	6625-360-2493	
6	H,D	DIGITAL VOLTMETER AN/GSM-64	6625-870-2264	
7	F,H,D	MULTIMETER ME-30/U	6625-669-0742	
8	F,H,D	SPECTRUM ANALYZER TS-723/U	6625-668-9418	
9	F,H,D	TEST SET, ELEC. TUBE TV-7D/U	6625-820-0064	
10	F,H,D	ATTENUATOR H-P-355A (3db)		
11	F,H,D	ATTENUATOR H-P-355B (20db)		
12	F	TOOL KIT, ELEC. EQPT. TK-100/G	5180-605-0079	
13	F,H,D	TOOL KIT, ELEC. EQPT. TK-105/G	5180-610-8177	
14	F,H,D	TOOL KIT, ELEC. INTERCEPT EQ. TK-165/G	5180-762-9298	

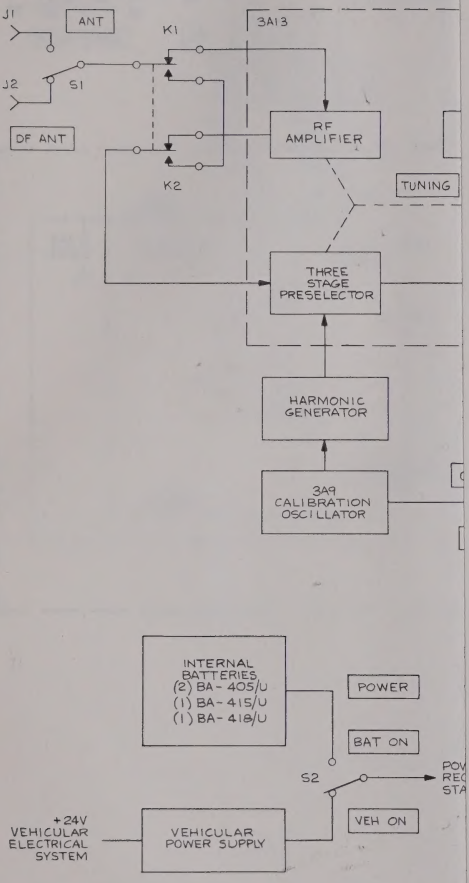


Figure 1. Radio Receiver R-902/GR, B

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		R-902/GR (continued)		
1	F,H,D,	SIGNAL GENERATOR AN/USM-44A	6625-669-4031	
2	F,H,D	COUNTER, ELEC. DIGITAL READOUT AN/USM-207	6625-911-6368	
3	F,H,D	OUTPUT METER TS-585B/U	6625-244-0501	
4	F,H,D	SIGNAL GENERATOR(FM) AN/URM-70	6625-519-2104	
5	F	MULTIMETER ME-26/U	6625-360-2493	
6	H,D	DIGITAL VOLTMETER AN/GSM-64	6625-870-2264	
7	F,H,D	MULTIMETER ME-30/U	6625-669-0742	
8	F,H,D	SPECTRUM ANALYZER TS-723/U	6625-668-9418	
9	F,H,D	TEST SET, ELEC. TUBE TV-7D/U	6625-820-0064	
10	F,H,D	ATTENUATOR H-P-355A (3db)		
11	F,H,D	ATTENUATOR H-P-355B (20db)		
12	F	TOOL KIT, ELEC. EQPT. TK-100/G	5180-605-0079	
13	F,H,D	TOOL KIT, ELEC. EQPT. TK-105/G	5180-610-8177	
14	F,H,D	TOOL KIT, ELEC. INTERCEPT EQ. TK-165/G	5180-762-9298	

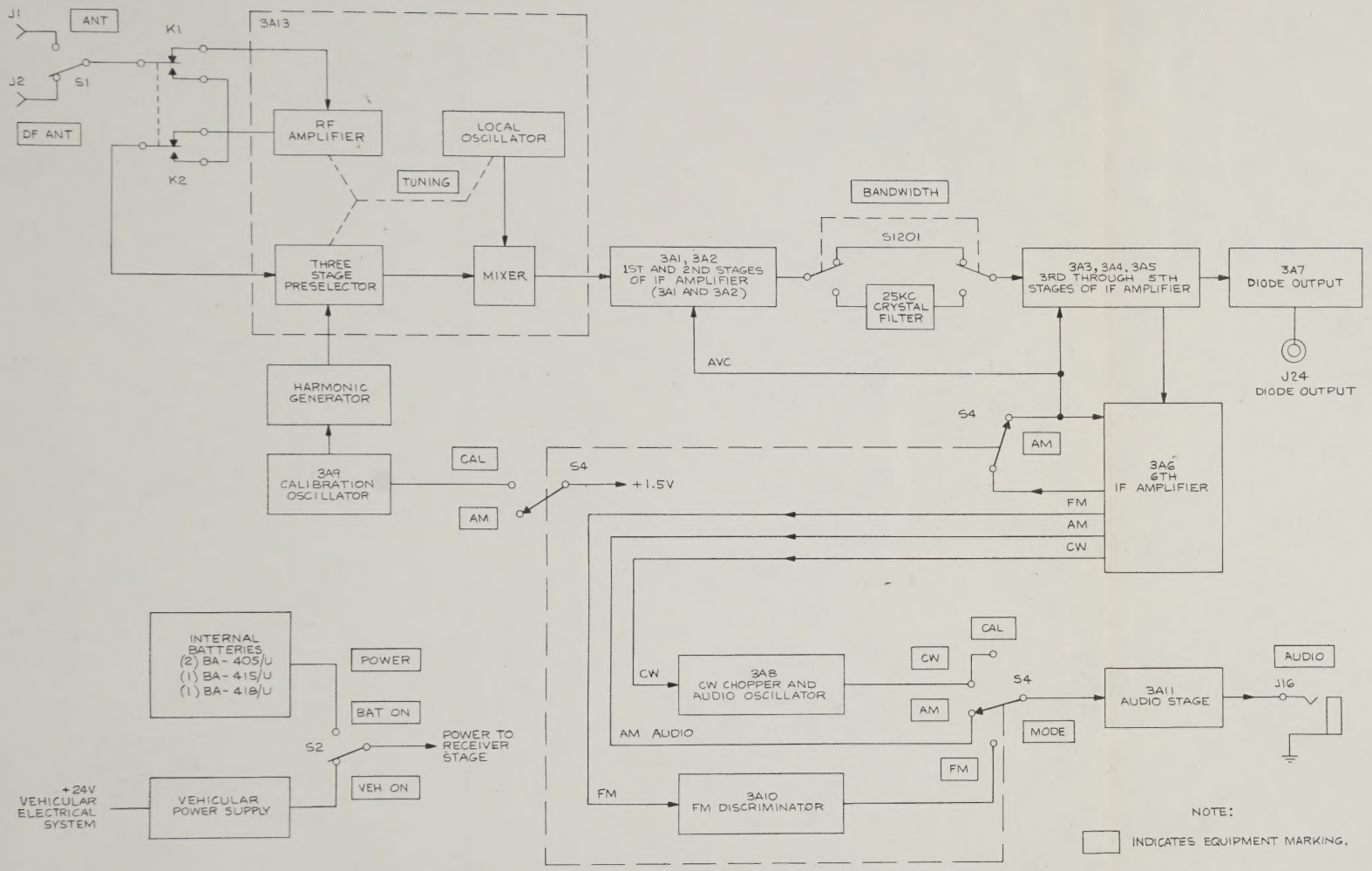
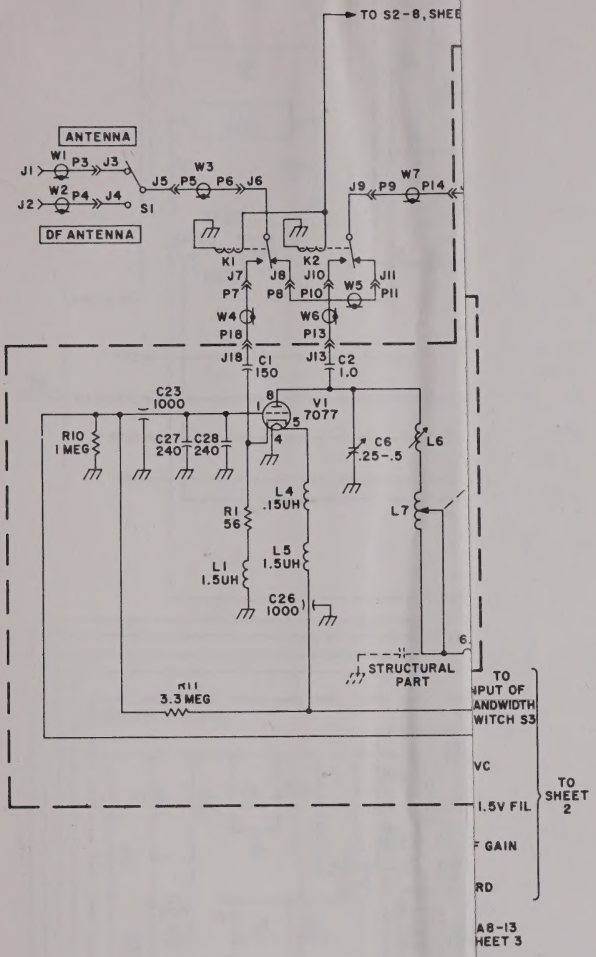


Figure 1. Radio Receiver R-902/GR, Block Diagram



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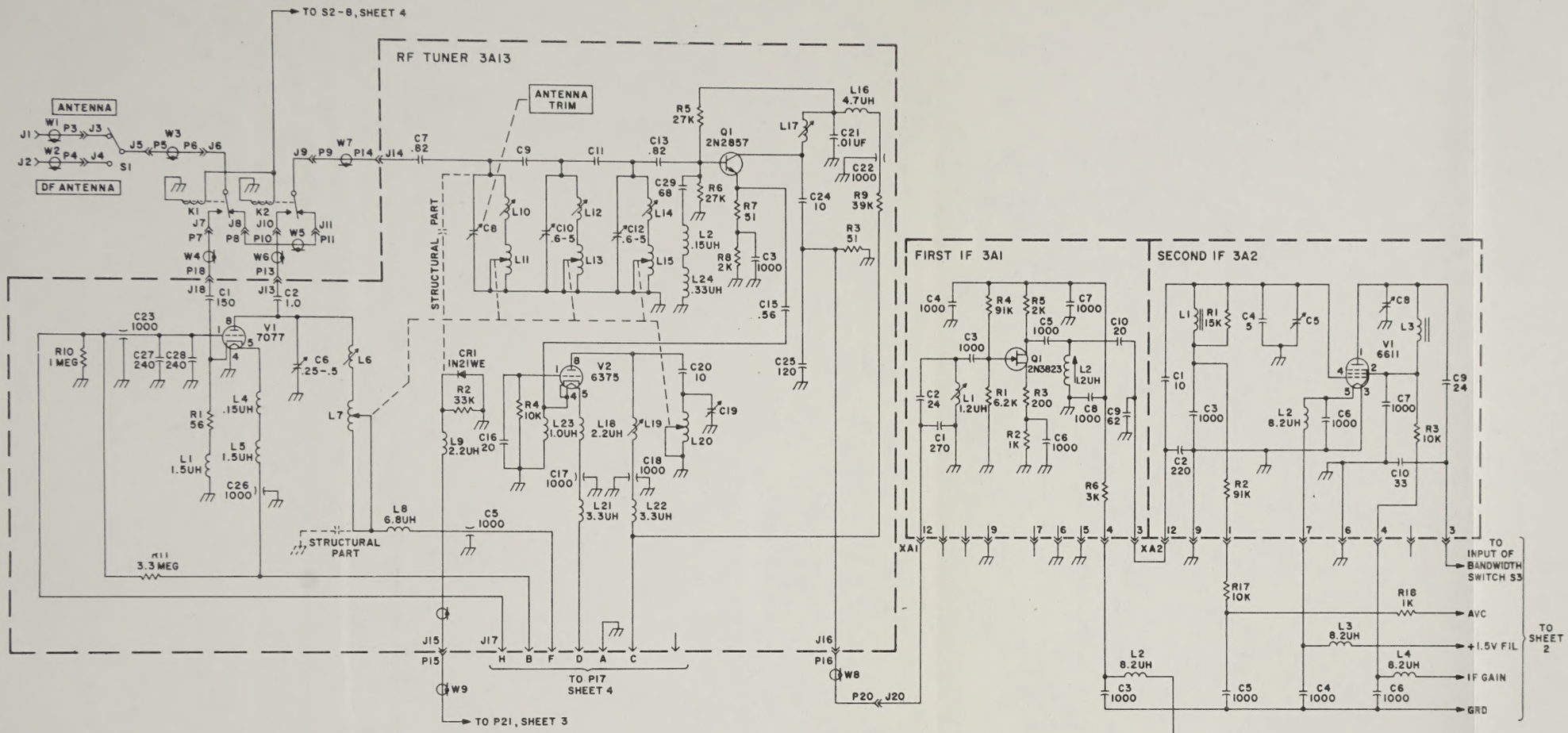
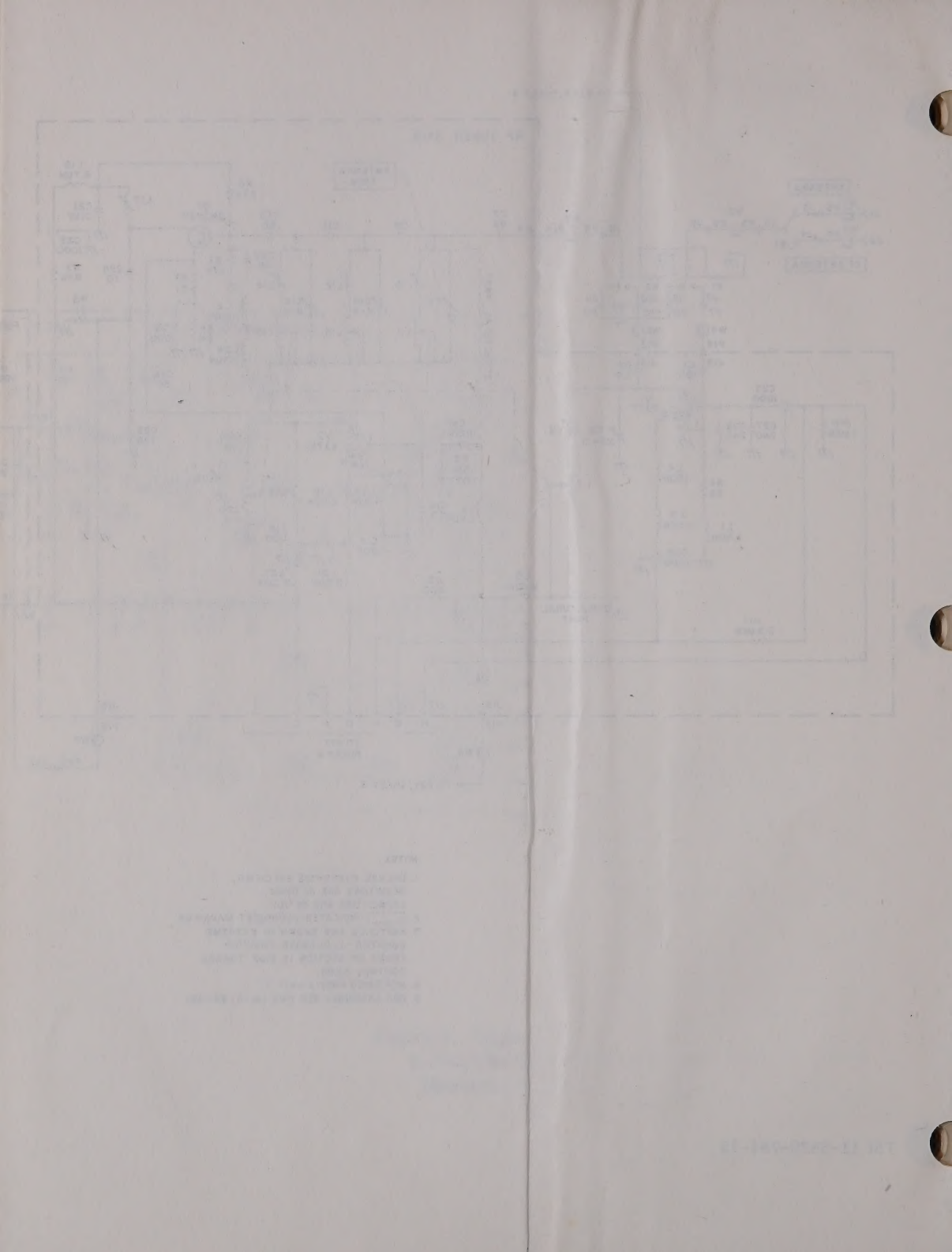


NOTES:

1. UNLESS OTHERWISE SPECIFIED, RESISTORS ARE IN OHMS. CAPACITORS ARE IN UUF.
2. ▭ INDICATES EQUIPMENT MARKINGS.
3. SWITCHES ARE SHOWN IN EXTREME COUNTER-CLOCKWISE POSITION. FRONT OF SECTION IS SIDE TOWARD CONTROL KNOB.
4. REF DESIG PREFIX UNIT 3.
5. FOR ASSEMBLY SEE DWG SM-D-643591

Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 1 of 4



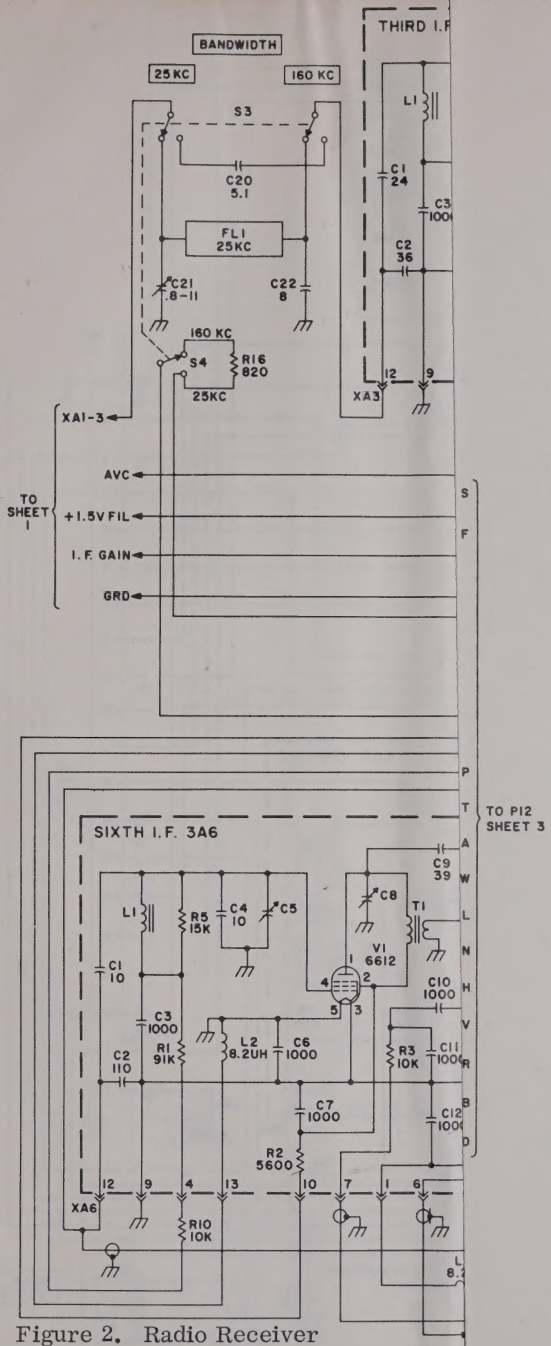


Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 2 of 4

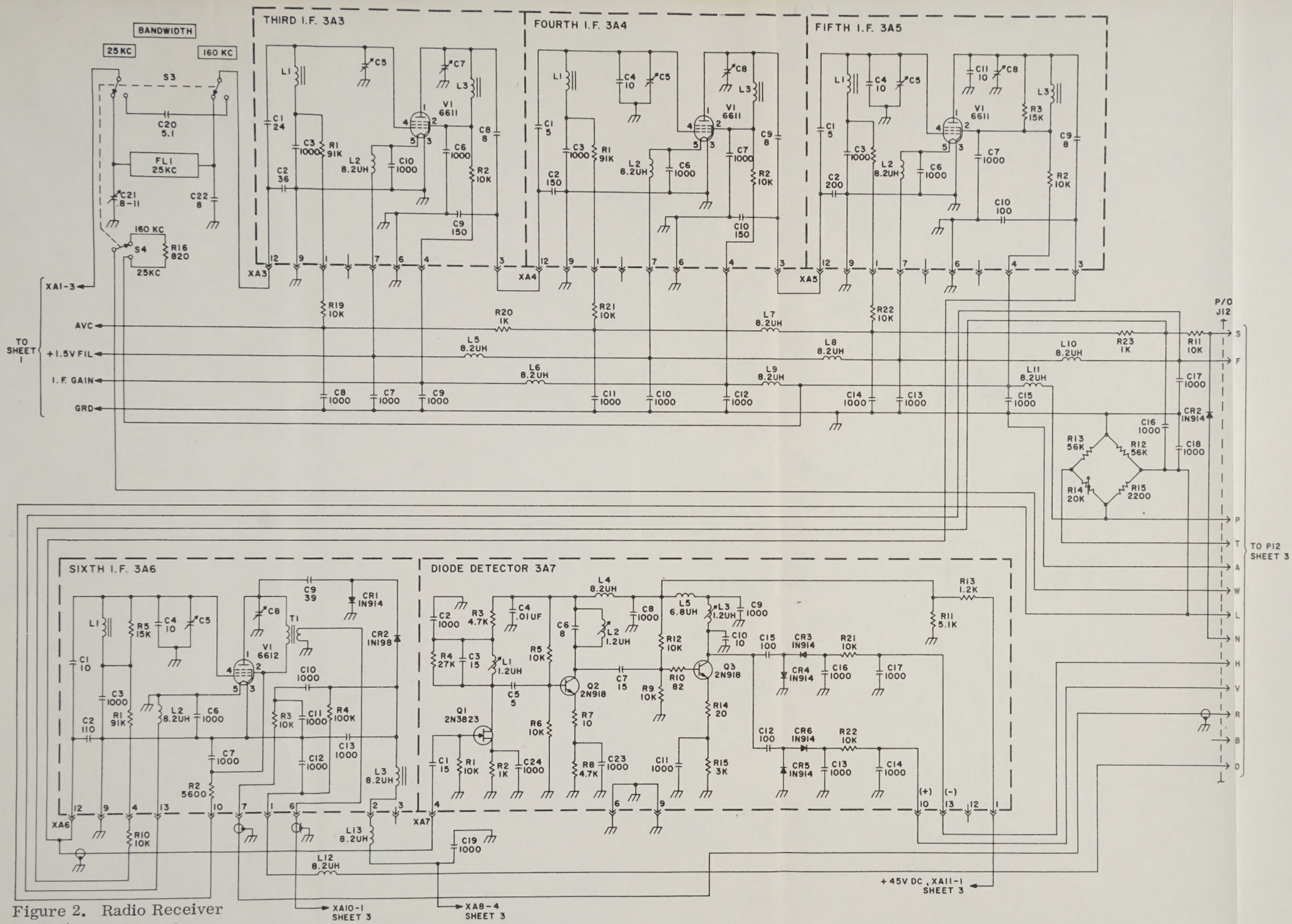
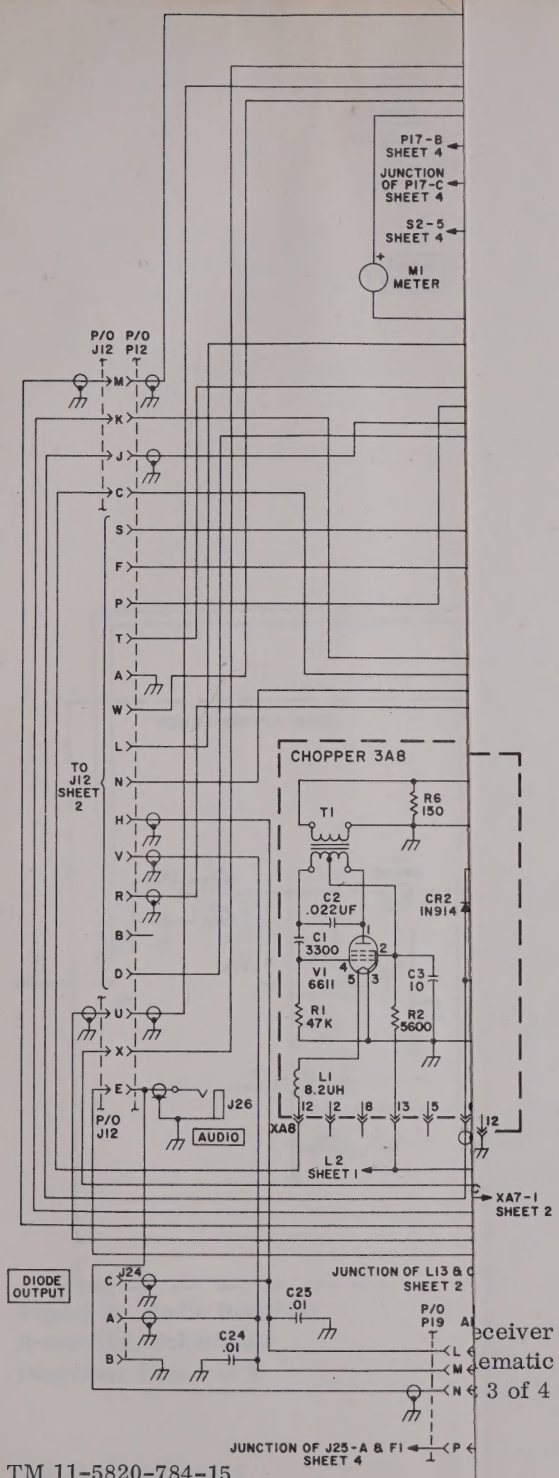


Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 2 of 4



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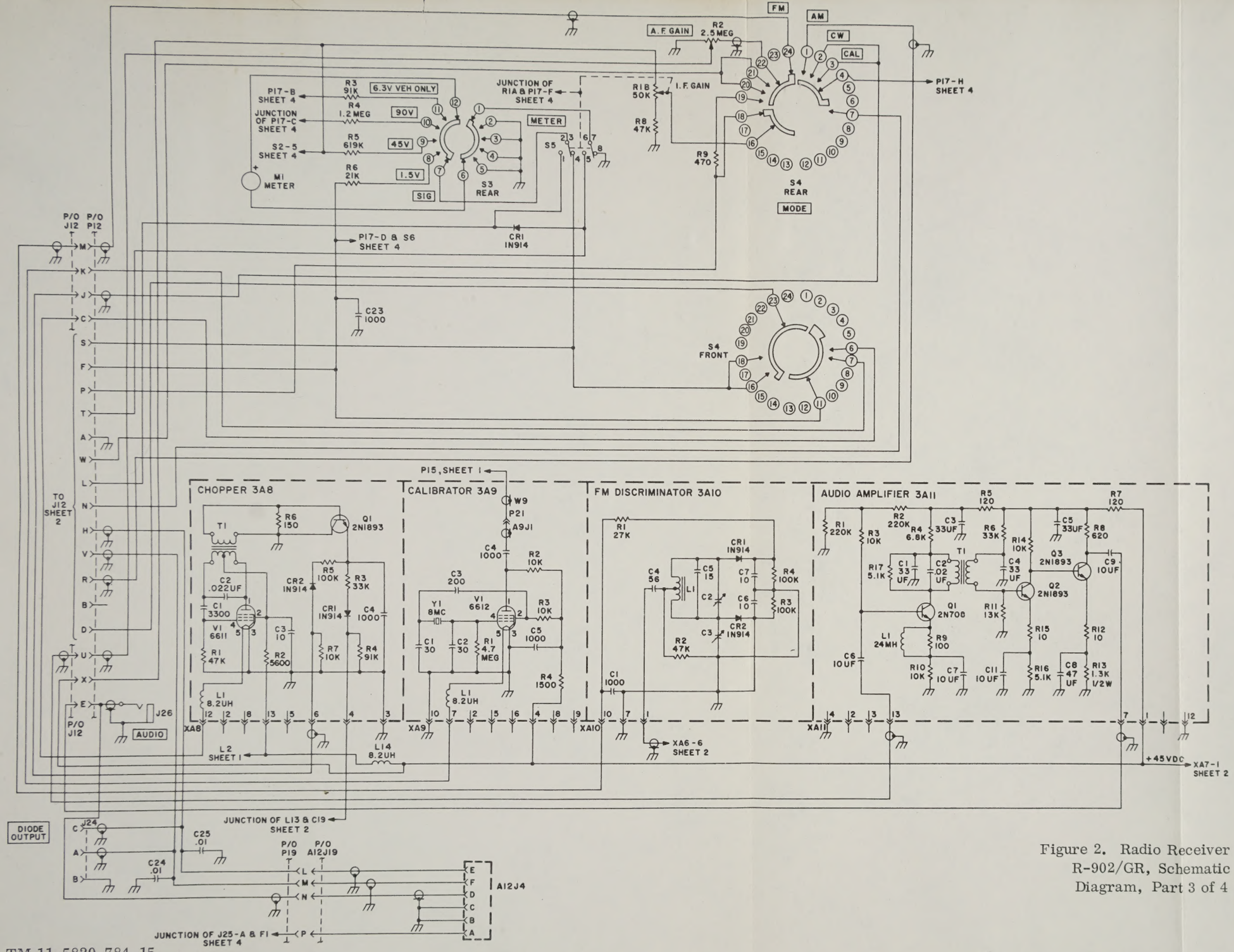


Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 3 of 4

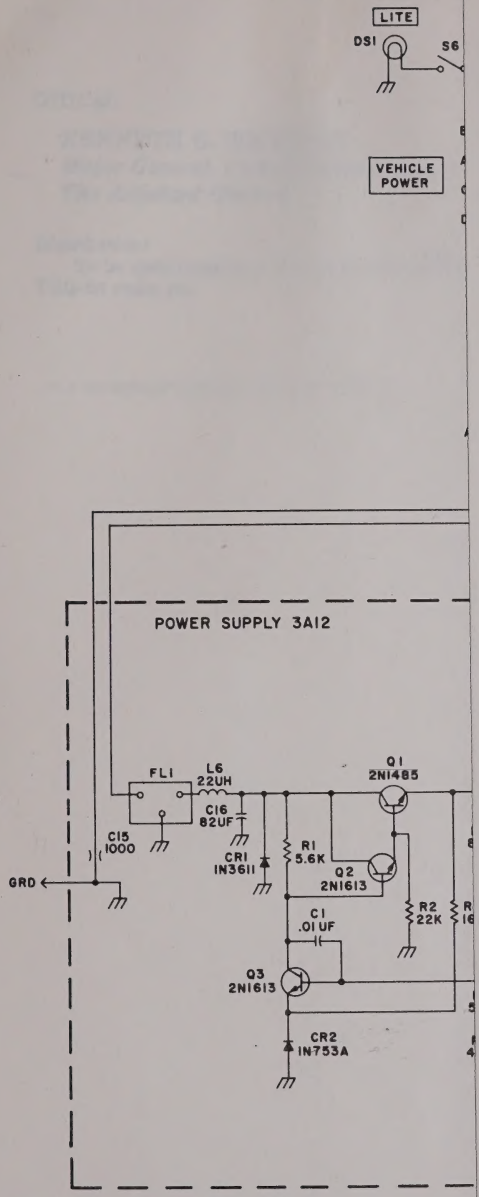


Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 4 of 4

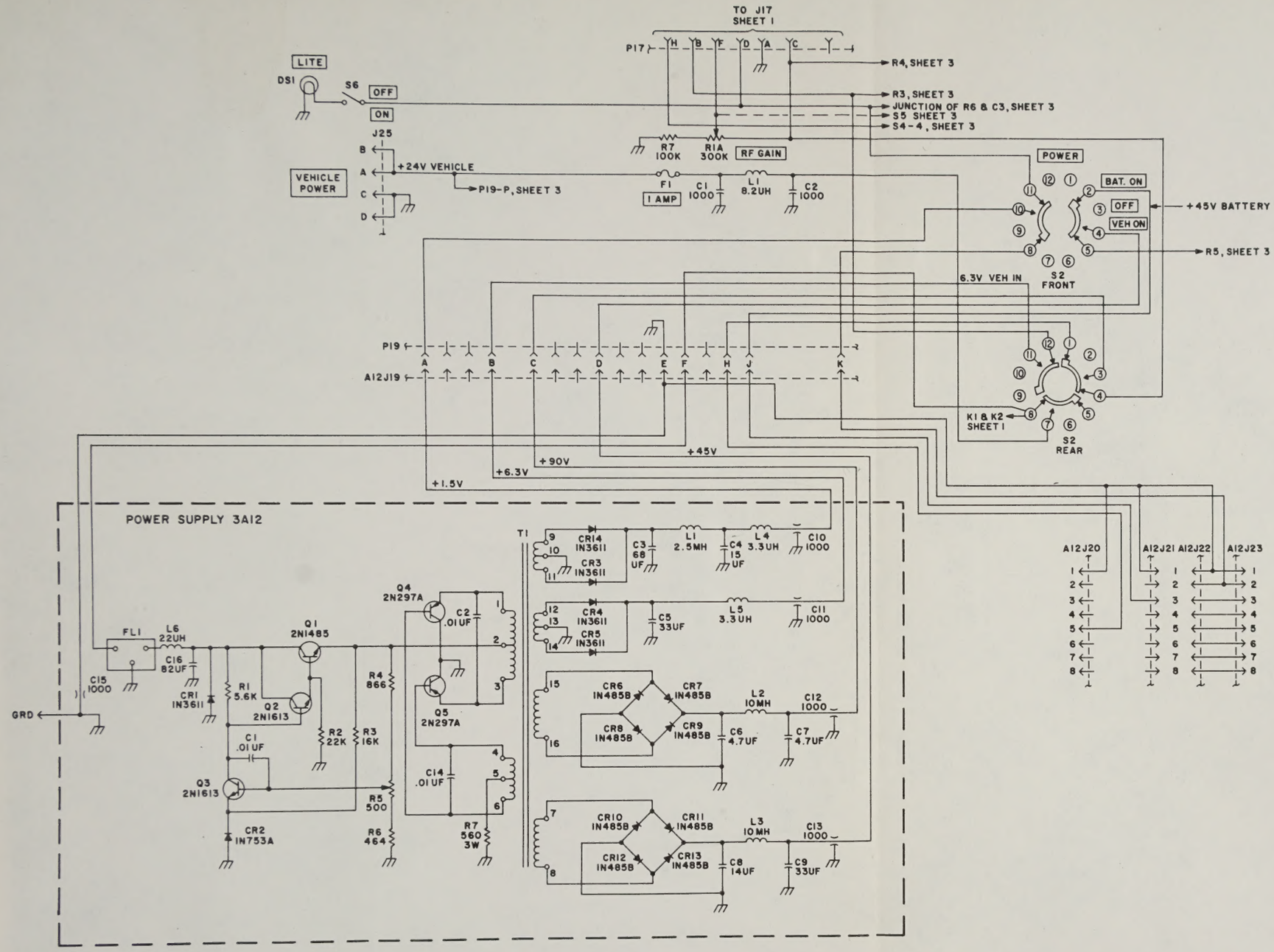
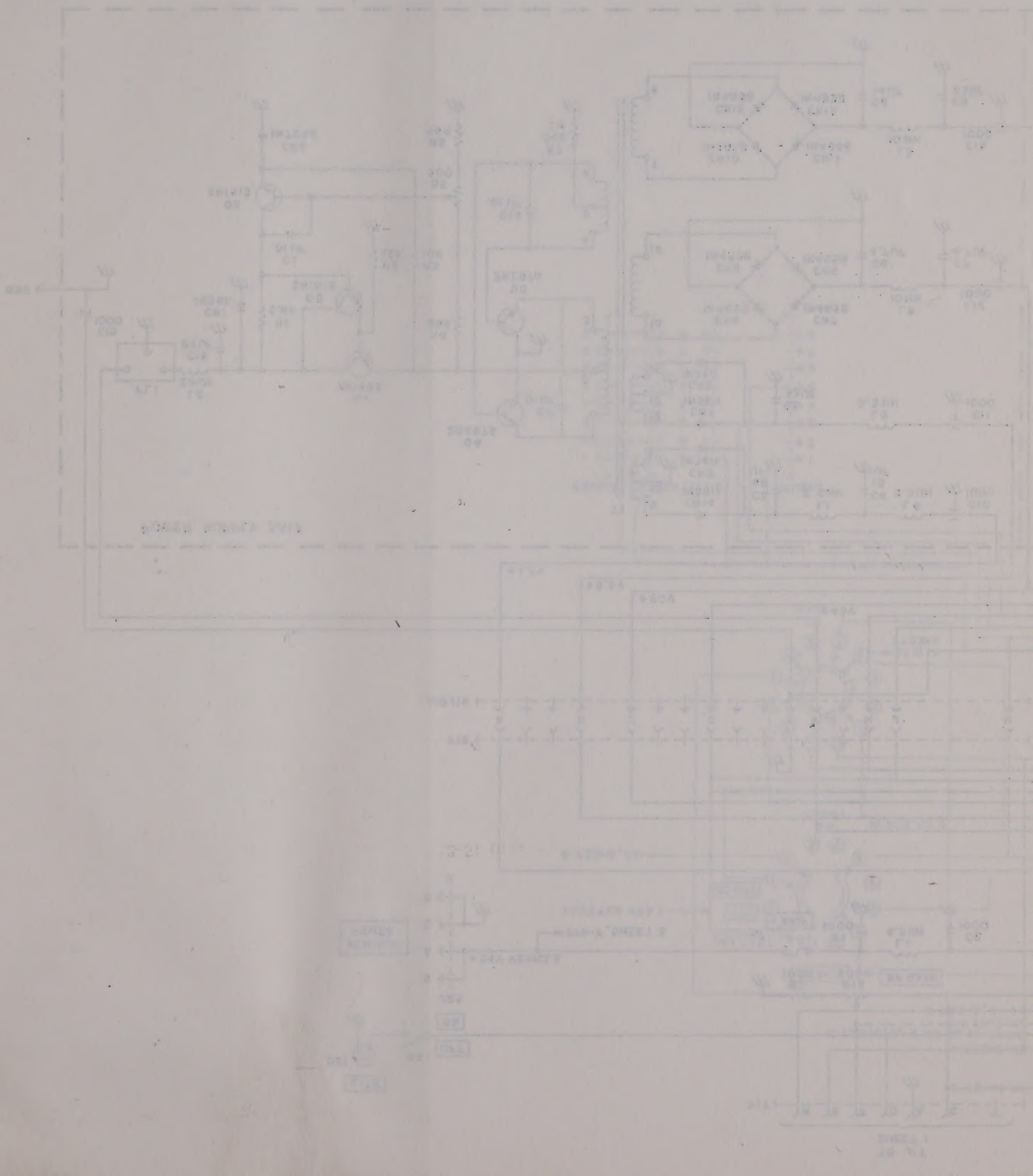


Figure 2. Radio Receiver R-902/GR, Schematic Diagram, Part 4 of 4



By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

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